African Swine Fever

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African Swine Fever Basics

- African Swine Fever (ASF) - viral haemorrhagic disease
- Bushpigs, warthogs, European wild pigs and domestic pigs.
- Caused by a complex DNA virus of the Asfarviridae family (replicates in white blood cells)
- ASF is a notifiable (Office Internationale des Epizooties) listed disease
- Potential for rapid spread
- Important impact on trade of pigs and meat products
- Only infects porcine species, NOT a human health issue

Symptoms

- High fever
- Loss of appetite
- Become depressed
- Extremities turn blueish-purple
- Haemorrhages (on the ears and abdomen)
- Group huddling, shivering, breathing abnormally, sometimes coughing
- If forced to stand, pigs are unsteady
- After a few days = comatose state and die
- Spontaneous abortions in pregnant sows
- At autopsy, swelling around the kidneys and muscle bleeding.
- Milder infections result in weight loss, poor body condition score, pneumonia, skin lesions and swollen joints.

Origins and spread

- ASF first identified in Kenya in 1921 and confined to Africa until 1957.
- Endemic in bushpigs and warthogs in sub-Saharan Africa.
- Spread to Western Europe in 1957 as a result of human food waste from airlines fed to pigs near Lisbon.
- Now eradicated in Portugal and Spain (biosecurity).
- In 2007 outbreaks: Georgia, Armenia, Azerbaijan and the European part of Russia, Ukraine and Belarus.
- Outbreaks occur both in wild pigs and on farms.

Diagnosis

- Identified by clinical symptoms
  - high fever, loss of appetite,
  - haemorrhages in skin and internal organs
  - death in 2-10 days
  - Moderately virulent forms of the virus produce mortality from 30-70%.
  - Mortality rates may be as high as 100%.
- Must be confirmed with a laboratory test
- Important to differentiate African Swine Fever (ASF) from Classical Swine Fever (CSF) by specific lab analyses as symptoms similar

Recent outbreaks

- Europe outbreaks 2018 (reported by European Commission) in Bulgaria, Italy, Latvia, Lithuania, Poland, Romania, Ukraine
- Outbreaks in wild pigs: Belgium, Czech Republic (outbreaks contained since Apr 2018), Estonia, Hungary, Italy, Latvia, Lithuania, Poland, Romania, Ukraine
- ASF is endemic in Sardinia (Italy)
- Russia and Trans-Caucasus regions
- China - First case identified in August of this year. Subsequent outbreaks have been seen on small farm holdings and in a slaughterhouse in Inner Mongolia.

Recent case study - Uganda

- Chenais *et al.* (2017) J. Prev Vet Med
- Major social impact especially for smaller pig producers
- Little budget for biosecurity
- Major impact on incomes for small producers
- Sales of infected dead pigs for human consumption (no difference in sales price)
- ASF outbreaks affected families ability to provide food, pay school and medical fees
- Fasina *et al.* (2011) estimated costs per annum US$910,836 per outbreak due to losses to ASF

Update on Chinese outbreaks

- Current count 22 outbreaks in 7 provinces.
- Infected regions have been isolated, have transport bans and porcine plasma has been removed from animal feeds.
- Since the outbreak, China has banned trade with ASF positive countries such as Russia
- Chinese delegations frequently purchase food products (including meat) from Russian cities close to Chinese border.
- Due to rising tariffs with the USA, China is increasingly importing food products from Russia

Transmission sources

- Via contact with infected animals, secretions, tissues, food waste
- Transport of animals, farm personnel and equipment
- Transmission and spread in endemic populations (Africa and Sardinia)
- Warthogs and bushpigs serve as a natural reservoir of the virus without showing clinical signs.
- ASF spreads between animals via the soft tick *Ornithodoros moubata* (usually only in tropical climates)
- Spread by direct contact and ingestion of infected meat.

Transmission facts and fiction

- Transmission and spread in new areas and domestic animals
- Wild pigs are often the first to become infected
- Direct contact with infected pigs
- Ingestion of garbage containing infected pig meat or pig products
- Contact with fomites (materials that have come into contact with infected animal e.g. environment, premises, vehicles, equipment, clothing)
- Biting flies and ticks
- ASF is NOT transmitted through the atmosphere/air
- Virus can persist on fomites and in meat products for over a year

Treatment for ASF

- **No vaccination** exists to combat ASF virus
- Eradication by
  - biosecurity on farm (vehicles, personnel, clothing)
  - controlled infected areas – no animal movements
  - transport bans
  - culling of infected and at risk pigs
  - disinfection of contaminated farms/feed mills etc

Prevention

- BIOSECURITY – can cost up to 10% of annual profuits to implement (Fasina *et al.,* 2011)
- High standards on farm
- Near forested areas, fence off farm to reduce exposure to potentially infected wild pigs.
- No staff to bring pork products onto farm
- Ensure pigs are not consuming pork products
- Taking a shower and changing clothes before entering a farm
- Carefully monitor introduction of new pigs onto farm, use reputable suppliers
- Inform staff of importance of biosecurity procedures

Key points

- African Swine Fever is a rapidly spread
- Highly contagious virus
- Recent areas of outbreak; Belgium (wild pigs) & China (farms and slaughterhouse)
- No treatment
- Biosecurity essential
- Keep farmed animals away from wild pigs

IMPLICATIONS FOR SWINE INDUSTRY IN EUROPE

- BAD NEWS!
  - If infection spreads to a domestic farm, all animals on site must be culled
  - Infection in swine population will restrict trading of pork products (current hold on Belgium pork exports outside the EU and a temporary hold on trading inside the EU)

- GOOD NEWS!
  - Not airborne, spread through contact/ingestion only
  - Can be eradicated with careful management and biosecurity